## REMARKS

The provisional election of Group I with traverse made during the telephone conference conducted on June 3, 2005 between Examiner and Ms. Catherine Bell is hereby affirmed. Claims 30-41 have been withdrawn. Claims 1, 10, 11 and 15 have been amended. No new claims have been added.

**Objection to the Claims**

Claim 15 has been amended such that the structure is shown after the line which introduces it.

**Claim Rejections Under 35 USC §112, second paragraph**

Claim 1 has been rejected under section 112 as being indefinite. The final clause of Claim 1 has been deleted, rendering this rejection moot.

**Claim Rejections Under 35 USC §102**

Claims 1-4, 7,8,11,17,20,24-26, and 29 have been rejected under 35 USC §102 (b) as being anticipated by US patent number 6,084,014 to Andtsjo et al. (hereinafter Andtsjo.)

Applicants have amended Claim 1 to further clarify that Applicants' presently claimed invention is limited to a metallocene catalyst compound having at least two indenyl rings or derivative of indenyl rings, wherein each ring is substituted at the 2 and 4 positions. Support for this amendment may be found on Page 95, numbered paragraph [00163]. Examiner alleges Examples 22 and 24 of Andtsjo disclose supercritical polymerization of propylene using metallocene catalyst, MAO as an activator, and all the claimed limitations. Andtsjo exemplifies the use of 1,2-ethylene bis(indenyl)zirconium di chloride supported on silica and dimethylsilylbis(indenyl) zirconium dichloride supported on silica.

Applicants' presently claimed invention has been amended to further clarify the structure of the metallocene catalyst compound. As amended, Applicants' presently claimed polymerization process is limited to a metallocene catalyst compound having at least two indenyl rings or derivative of indenyl rings, wherein each ring is substituted at the 2 and 4 positions.

Andtsjo does not disclose nor suggest the use of a metallocene catalyst compound having at least two indenyl rings or derivative of indenyl rings, wherein each ring is substituted at the 2 and 4 positions. Instead, Andtsjo is directed to the use of 1,2-ethylene bis(indenyl)zirconium di chloride supported on silica and dimethylsilylbis(indenyl) zirconium dichloride supported on silica. Both of the disclosed catalyst compounds are not substituted at the 2 and the 4 positions. Accordingly, Andtsjo fails to disclose all the limitations recited by Applicants. Andtsjo cannot anticipate Applicants presently claimed invention.

**Claim Rejections Under 35 USC §103**

Claims 5, 6, 9, 16, 18, 19, 27 and 28 have been rejected under §103 as being unpatentable over Andtsjo. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Further, even assuming that all elements of an invention are disclosed in the prior art, an Examiner cannot establish obviousness by locating references that describe various aspects of a patent Applicants' invention without also providing evidence of the motivating force which would have impelled one skilled in the art to do what the patent Applicant has done. *Ex parte Levengood*, 28 U.S.P.Q. 1300 (Bd. Pat. App. Int. 1993). The references, when viewed by themselves and not in retrospect, must suggest the invention. *In Re Skoll*, 187 U.S.P.Q. 481 (C.C.P.A. 1975).

Applicants have amended the presently claimed invention to recite the limitation that the process employs a metallocene catalyst compound having at least two indenyl rings or derivative of indenyl rings, wherein each ring is substituted at the 2 and 4 positions. Andtsjo is directed to use of a metallocene compound having indenyl groups substituted at the 2 but not at the 4 positions. Andtsjo merely discloses that "[a]s catalyst also metallocene-type catalysts can be used...these catalysts typically comprise as a procatalyst component a metallocene compound, for example bis(cyclopentadienyl)titanium dialkyl or bis(cyclopentadienyl)zirconium alkonyl or chlorides thereof, and an activator component, which typically is alumoxane or an ionic activator" (Col. 5, lines 45-54.) Andtsjo fails to disclose or suggest Applicants' recited metallocene catalyst compounds. Furthermore, Applicants clearly demonstrate the improvement of the presently claimed invention over that wherein the bis indenyl metallocene catalyst compounds are substituted at the number 2 position, but not at both the number 2 and the number 4 position. In particular, Applicants disclose in Table 1 that the catalyst activity of the inventive catalyst compounds is ten times that of catalysts which are substituted at the 2 position, but unsubstituted at the 4 position (see Table 1, and numbered paragraphs [00162]-[00164] of the application as filed.)

Accordingly, Andtsjo fails to disclose or suggest the catalyst compound recited by Applicants. Furthermore, Applicants have shown an unexpected benefit is achieved using the recited process as compared to the disclosure of Andtsjo. As such, Andtsjo cannot reasonably be said to render Applicants' presently claimed invention obvious.

Claims 12, 15, and 21-23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Andtsjo further in view of U.S. Patent No. 6,124,231 to Fritze et al. (hereinafter Fritze.)

On page 5 of the instant Office Action, Examiner alleges Andtsjo to suggest the use of "at least common bis-Cp (col. 5, lines 45-54) and bis indenyl (Examples 22 and 24) metallocenes and analogs thereof. Col. 5, lines 45-54 of Andtsjo is reproduced above. Andtsjo does not disclose "common" metallocenes, but instead is directed to

catalysts that "typically comprise as a procatalyst component a metallocene compound, for example bis(cyclopentadienyl)titanium dialkyl or bis(cyclopentadienyl)zirconium alkonyl or chlorides thereof, and an activator component, which typically is alumoxane or an ionic activator" (Col. 5, lines 48-53.) Such a broad statement is in contradiction to the well established precept that catalysis is an unpredictable art, a precept that is exemplified by Applicants' unexpected improvement disclosed in Table 1. Such a broad statement does not suggest the limited process recited by Applicants, wherein the metallocene catalyst compound has at least two indenyl rings or derivative of indenyl rings, wherein each ring is substituted at the 2 and 4 positions. Nor does this broad statement suggest any particular benefit of using Applicants' highly limited catalyst compound under the recited supercritical conditions.

Fritze is directed to a supported catalyst composition for polymerizing olefins. Fritze discloses literally thousands of catalysts, some of which are bis-indenyl compounds substituted at the numbers 2 and 4 positions. However, Fritze fails to disclose a process comprising Applicants' recited catalyst compound, wherein the temperature is at or above the critical temperature for the reaction medium, and the pressure is at least 500 kPa above the critical pressure of the reaction medium. Fritze also fails to disclose or suggest which, of the thousands of disclosed catalysts compounds, would provide for the unexpected benefits disclosed by Applicants. In particular, Applicants' disclosed 10 fold increase in catalyst rate over similar catalyst compounds which are substituted at the number 2 position, but not at Applicants recited numbers 2 and 4 positions. Thus, Applicants' disclosure is proof of the unpredictable nature of the subject matter. Applicants' discovered unexpected benefit is not suggested nor disclose in the teachings of Andtsjo, Fritze, or a combination of the two references.

To arrive at Applicants' presently claimed invention, one of ordinary skill in the art would first have to disregard the well established precept that catalysis is an unpredictable art, and counter to reason, understand the disclosure of Andtsjo to apply to the teachings related to all metallocene catalyst compounds. Next, one would need to turn to Fritze and in the absence of any suggestion or teachings to do so, select specific

bis-indenyl metallocene catalysts wherein both indenyl rings are substituted at the number 2 and the number 4 positions from a list which encompasses thousands of catalysts. Next, in the complete absence of any teachings or suggestion to do so, one would need to utilize these specific catalysts in a process wherein the temperature is at or above the critical temperature for the reaction medium, and the pressure is at least 500 kPa above the critical pressure of the reaction medium. Accordingly, no reasonable conclusion can be drawn which renders Applicants' presently claimed invention obvious. In fact, Examiner's rejection appears to be based on impermissible hindsight, wherein Applicants' presently claimed invention was used as a roadmap to select the various limitations from the thousands of choices disclosed in the prior art.

Even absent hindsight, Applicants' presently claimed invention, as amended, is not rendered obvious by Andtsjo, Fritze, or a combination thereof. It is well settled that even if the process were prima facie obvious merely from a consideration of reactants, media and steps employed, the invention as a whole can nevertheless be unobvious within the meaning of 35 USC §103 by reason of an unsuggested increase in yield employing less reactant, *In re Van Schickh* (CCPA 1966) 362 F.2d 821, 150 USPQ 300. Furthermore, claims to a process involving a combination of reactants and reaction conditions within the broad teaching of the prior art are patentable where the combination produces an unexpected result rather than the optimum of that taught by the prior art. *Ex parte Hoff et al.* (POBA 1959) 127 USPQ 281; *In re Sebek* CCPA1972) 465 F.2d 904, 175 USPQ 93. Applicant's allegations of unexpected results cannot be ignored merely because the claimed process is within the broad teachings of the prior art. *In re Cosfello* (CCPA 1973) 480 F.2d 894, 178 USPQ 290. See also, comparative data in examples in the specification showing an unobvious result (*In re Margolis* (CAFC1986) 785 F.2d 1029,228 USPQ 940.)

Furthermore, even though Applicants' disclosed reactivity, as well as the ability to produce a propylene polymer where the polymer has a heat of fusion of 70 J/g and has a $g'_{avg}$ of 0.98 or less are not recited in the claims, it has been held that the unexpected result upon which patentability is based need not always be recited in the claims, at least

when the feature responsible therefore is. *In re Merchant* (CCPA 1978) 575 F.2d 865, 197 USPQ 785.

Applicants respectfully request the rejection of the claims be removed, and the claims, as amended, be passed to allowance. Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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